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# Dallas/Fort Worth Simulation Phase II - Triple Simultaneous Parallel ILS Approaches



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16. Abstract  A dynamic, real-time simulation was conducted at the Federal Aviation Administration (FAA) Technical Center, September 25 - October 5, 1989, to evaluate triple simultaneous independent parallel approach operations for the Dallas/Fort Worth (D/FW) Airport. The simulation was part of an ongoing effort to evaluate plans for increasing air traffic capacity in the D/FW area and to evaluate multiple parallel approaches in general. An additional parallel runway (16L), with centerline 5,000 ft east of the existing 17L runway, was simulated in a triple simultaneous parallel operation conducted under Instrument Meteorological Conditions (IMC).  The results of the study indicated that controllers were able to maintain miss distances, between blundering aircraft and nonblundering aircraft, in the proposed D/FW triple simultaneous parallel Instrument Landing System (ILS) approach operation, that were statistically equivalent to the miss distances maintained in the approved dual approach condition. None of the blunders in the triple or dual approach conditions resulted in a slant range miss distance of less than 1,000 ft. Finally, controllers, controller observers and ATC management observers concluded that the triple simultaneous ILS approach operation at D/FW is acceptable, achievable, and safe.					
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## EXECUTIVE SUMMARY

A dynamic, real-time simulation was conducted at the Federal Aviation Administration (FAA) Technical Center, September 25 - October 5, 1989, to evaluate triple simultaneous parallel Instrument Landing System (ILS) approach operations for the Dallas/Fort Worth (D/FW) Airport. The simulation was part of an ongoing effort to evaluate plans for increasing air traffic capacity in the D/FW area and to evaluate multiple parallel approaches in general. An additional parallel runway (16L), with centerline 5000 ft east of the existing 17L runway, was simulated in a triple simultaneous ILS operation conducted under Instrument Meteorological Conditions (IMC).

Both dual and triple simultaneous parallel ILS approaches were simulated, and controllers monitored air traffic on the localizers. Blunders were introduced, according to predetermined scenarios, by having simulated aircraft deviate off the localizer at 10, 20, and 30 degree angles. Some of the blundering aircraft also simulated loss of radio communication with the controllers. The ability of the controllers to cope with the blunders under the different parallel runway conditions was the central issue in the study. Three questions were to be answered:

a. Are the miss distances, between blundering aircraft and non-blundering aircraft, in the triple simultaneous parallel ILS approach operation at least statistically equivalent to the miss distances achieved in the dual simultaneous parallel ILS approach operation as indicated by the Aircraft Proximity Index (API) and Closest Point of Approach (CPA) metrics?

b. Can the controllers intervene in the event of a blunder to provide a miss distance greater than 500 ft between the affected aircraft? (A slant range of not less than 500 ft was the test criterion established by the executive committee of the FAA Multi-Parallel Simultaneous ILS Approach Program. This committee consists of representatives from Air Traffic, Flight Standards, Aviation Standards, and Research and Development.)

c. Do the controllers and other participants in the simulation view the proposed triple simultaneous parallel ILS configuration as acceptable with regard to achievability, acceptability, and safety?

The results of the study indicated that controllers were able to maintain miss distances, between blundering aircraft and nonblundering aircraft, in the proposed D/FW triple simultaneous parallel ILS approach operation, that were statistically equivalent to the miss distances maintained in the approved dual approach

condition. None of the blunders in the triple or dual approach conditions resulted in a slant range miss distance of less than 1000 ft. Thirdly, controllers, controller observers, and ATC management observers concluded that the triple simultaneous ILS approach operation at D/FW is acceptable, achievable, and safe.